

IN THE CLAIMS:

1 1-28 (Cancelled)

1 29. (Currently Amended) A method for accessing a data storage system, comprising:

2 maintaining a virtual logical unit assigned to a one or more specific clients ~~client~~;

3 receiving a log in request from a first ~~the~~ specific client, the log in request di-

4 rected to the virtual logical unit;

5 ~~generating initiating~~, in response to the log in request, a first logical unit number

6 map (lun map), from the virtual logical unit to one or more physical logical units, the first

7 specific client having permission to access the physical logical units mapped ~~indicated~~ by

8 the first lun map, the first lun map presenting one or more client specific lun numbers,

9 accessible solely by the first specific client, mapped to one or more physical lun numbers

10 utilized by the storage operating system;

11 exporting the client specific lun numbers to the first specific client; and

12 receiving a data access request from the first specific client, the request directed to

13 a selected client specific lun in the first lun map, and translating the client specific lun ~~by~~

14 ~~the map~~ into a selected physical lun number, the physical lun number accessing a the

15 physical logical unit supporting the client specific lun.

1 30. (Previously Presented) The method of claim 29, further comprising:

2 generating the lun map to have a set of ordered pairs mapping one or more virtual

3 luns to one or more physical luns.

1 31. (Currently Amended) The method of claim 29, further comprising:

2 exporting a virtual lun number to the client; and

3 associating a the physical lun number with the storage system.

1 32. (Previously Presented) The method of claim 29, further comprising:

2 identifying a set of luns that the client may access in response to the client logging

3 in by,

4 (a) selecting a lun data structure;

5 (b) searching through a list of client identifiers in the lun data structure to identify

6 whether the client may access the selected lun;

7 repeating steps (a) and (b) for each lun data object associated with a given storage sys-

8 tem; and

9 accessing, in response to a client data access request, a lun data object by use of

10 the lun map and without searching the lun data structure.

1 33. (Previously Presented) The method of claim 29, further comprising:

2 accessing a set of lun data structures associated with the storage system in identi-

3 fying the one or more physical logical units which the client has permission to access.

1 34. (Currently Amended) The method of claim 29, further comprising:

2 using as a world wide name as a client identifier.

1 35. (Previously Presented) The method of claim 29, further comprising:
2 using a Fibre Channel switching network for the client to access the data storage
3 system.

1 36. (Previously Presented) The method of claim 29, further comprising:
2 using an Ethernet switching network for the client to access the data storage sys-
3 tem.

1 37. (Previously Presented) The method of claim 29, further comprising:
2 using a multi-protocol storage appliance as the data storage system.

1 38. (Previously Presented) The method of claim 29, further comprising:
2 exporting a set of virtual luns to the client as a set of accessible luns.

1 39. (Previously Presented) The method of claim 29, further comprising:
2 containing the lun map within an initiator data structure accessible to the virtual
3 logical unit.

1 40. (Currently Amended) A data storage system, comprising:
2 a virtual logical unit assigned to a specific client;

3 a log in request received from the specific client, the log in request directed to the
4 virtual logical unit;

5 a logical unit number map (lun map) initiated, in response to the log in request,
6 the map mapping from the virtual logical unit to one or more physical logical units, the
7 specific client having permission to access the physical logical units indicated by the lun
8 map, the map presenting one or more client specific lun numbers mapped to one or more
9 physical lun numbers utilized by the storage operating system;

10 the client specific lun numbers exported to the client; and

11 a data access request received from the client, the request directed to a selected
12 client specific lun, and translating the client specific lun by the map into a selected physi-
13 cal lun number, the physical lun number accessing ~~a~~ the physical logical unit supporting
14 the client specific lun.

1 41. (Previously Presented) The data storage system of claim 40, further comprising:

2 the lun map having a set of ordered pairs mapping one or more virtual luns to one
3 or more physical luns.

1 42. (Currently Amended) The data storage system of claim 40, further comprising:

2 ~~exported~~ a virtual lun number exported to the client; and

3 a the physical lun number associated with the storage system.

1 43. (Previously Presented) The data storage system of claim 40, further comprising:

2 a set of luns that the client may access identified in response to the client logging
3 in by,
4 (a) selecting a lun data structure;
5 (b) searching through a list of client identifiers in the lun data structure to identify
6 whether the client may access the selected lun;
7 repeating steps (a) and (b) for each lun data object associated with a given storage sys-
8 tem; and
9 a client data access request to access a lun data object by use of the lun map and
10 without searching the lun data structure.

1 44. (Previously Presented) The data storage system of claim 40, further comprising:
2 a set of lun data structures associated with the storage system accessed in identify-
3 ing the one or more physical logical units which the client has permission to access.

1 45. (Previously Presented) The data storage system of claim 40, further comprising:
2 a world wide name used as a client identifier.

1 46. (Previously Presented) The data storage system of claim 40, further comprising:
2 a Fibre Channel switching network used for the client to access the data storage
3 system.

1 47. (Previously Presented) The data storage system of claim 40, further comprising:

2 an Ethernet switching network used for the client to access the data storage sys-
3 tem.

1 48. (Previously Presented) The data storage system of claim 40, further comprising:
2 a multi-protocol storage appliance used as the data storage system.

1 49. (Previously Presented) The data storage system of claim 40, further comprising:
2 a set of virtual luns exported to the client as a set of accessible luns.

1 50. (Previously Presented) The data storage system of claim 40, further comprising:
2 the lun map contained within an initiator data structure accessible to the virtual
3 logical unit.

1 51. (Currently Amended) A computer readable media, comprising:
2 said computer readable media containing instructions for execution on a processor
3 for accessing a data storage system, the data storage system having the steps of,
4 maintaining a virtual logical unit assigned to a specific client;
5 receiving a log in request from the specific client, the log in request directed to the
6 virtual logical unit;
7 initiating, in response to the log in request, a logical unit number map (lun map)
8 from the virtual logical unit to one or more physical logical units, the specific client hav-
9 ing permission to access the physical logical units indicated by the lun map, the map pre-

10 sending one or more client specific lun numbers mapped to one or more physical lun
11 numbers utilized by the storage operating system;
12 exporting the client specific lun numbers to the client; and
13 receiving a data access request from the client, the request directed to a selected
14 client specific lun, and translating the client specific lun by the map into a selected physi-
15 cal lun number, the physical lun number accessing ~~a~~ the physical logical unit supporting
16 the client specific lun.

Please add new claims 52, *et seq.* as follows:

- 1 52. (New) A method for accessing a data storage system, comprising:
- 2 logging into the data storage system by a client;
- 3 generating a logical unit number map (lun map) for one or more physical logical
- 4 units the client is permitted to access, the lun map excluding mapping of physical logical
- 5 units the client is not permitted to access;
- 6 exporting the lun map to the client; and
- 7 receiving a data access request from the client for data on a lun mapped by the lun
- 8 map.
- 1 53. (New) The method of claim 52, further comprising:
- 2 accessing the physical logical unit supporting the client specific lun.
- 1 54. (New) The method of claim 52, further comprising:
- 2 identifying a set of luns that the client may access in response to the client logging
- 3 in by,
- 4 (a) selecting a lun data structure;
- 5 (b) searching through a list of client identifiers in the lun data structure to identify
- 6 whether the client may access the selected lun;
- 7 repeating steps (a) and (b) for each lun data object associated with a given storage
- 8 system; and
- 9 accessing, in response to a client data access request, a lun data object by use of
- 10 the lun map and without searching the lun data structure.

1 55. (New) The method of claim 53, further comprising:
2 accessing a set of lun data structures associated with the storage system in identi-
3 fying the one or more physical logical units which the client has permission to access.

1 56. (New) The method of claim 53, further comprising:
2 containing the lun map within an initiator data structure accessible to the virtual
3 logical unit.

1 57. (New) A system for accessing a data storage system, comprising:
2 a client configured to log into the data storage system;
3 a client specific logical unit number map (lun map) configured to be generated for
4 one or more physical logical units the client is permitted to access, the lun map further
5 configured to exclude mapping of physical logical units the client is not permitted to ac-
6 cess;
7 the lun map further configured to be exported to the client; and
8 the client further configured to send a data access request for data on a lun
9 mapped by the lun map.

1 58. (New) The system of claim 57, further comprising:
2 the physical lun number configured to access the physical logical unit.

1 59. (New) The system of claim 57, further comprising:

2 (a) a lun data structure selected in response to the log in by the client;
3 (b) a storage system to search through a list of client identifiers in the lun data
4 structure to identify whether the client may access the selected lun, the storage system to
5 repeat steps (a) and (b) for each lun data object associated with a given storage system;
6 and
7 a lun data object accessed by use of the lun map and without a search of the lun
8 data structure.

1 60. (New) The system of claim 57, further configured to access a set of lun data struc-
2 tures associated with the storage system to identify the one or more physical logical units
3 which the client has permission to access.

1 61. (New) The system of claim 57, further comprising:
2 an initiator data structure configured to access the virtual logical unit contained in
3 the lun map.

1 62. (New) A computer readable media, comprising:
2 said computer readable media containing instructions for execution on a processor
3 for the practice of a method of accessing a data storage system, the method having the
4 steps of,
5 logging into the data storage system by a client;
6 generating a client specific logical unit number map (lun map) for one or more
7 physical logical units the client is permitted to access, the lun map excluding mapping of
8 physical logical units the client is not permitted to access;

9 exporting the lun map to the client; and
10 receiving a data access request from the client for data on a lun mapped by the lun
11 map.